Nova Scotia

ANNUAL REPORT

*for the fiscal year ending March 31, 1986*

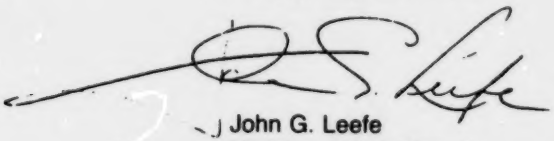
# Department of Fisheries

To His Honour
The Honourable Alan R. Abraham, C.D.
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

I have the honour to submit herewith the Twenty-Second Annual Report of the Department of Fisheries for the fiscal year ending March 31, 1986.

Respectfully submitted,



John G. Leefe
Minister of Fisheries

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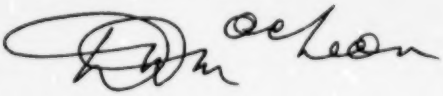

D.A. MacLean
Deputy Minister

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## THE FISHING INDUSTRY

Total landings of commercial marine species in Nova Scotia increased in 1985.

Fishermen in the province landed 461,234 metric tons of fish, shellfish and marine plants in 1985, representing a 14.5 per cent increase over the 1984 catch of 402,730 metric tons. The landed value of all species increased 17.9 per cent to a record value of $312.7 million from $265.3 million.

Lobster again was the most valuable species in 1985, returning $94.2 million to fishermen. Cod was second with a landed value of $68.6 million, while scallops provided $49.4 million to fishermen in that sector of the industry.

All sectors of the fishery posted increases in landings, with groundfish up 6.2 percent, pelagic and estuarial up 40.0 per cent and molluscs and crustaceans up 20.0 per cent. Landed values rose 20.8 per cent for groundfish, 33.7 per cent for pelagic and estuarial and 13.5 per cent for molluscs and crustaceans.

A protracted strike in the Newfoundland fishing industry helped push the landed value of the Nova Scotia fishery to a record high. In addition, a reorganization of the Department led to the creation of a new marketing division that helped the industry identify new market opportunities. Through domestic and international promotion, the new division also helped increase consumption of all seafood products. Efforts in the retail sector prompted retail food chains to take a new look at seafood and place greater emphasis on both sales and promotion in the domestic market.

## INDUSTRIAL DEVELOPMENT

The objective of the Industrial Development Division is to assist in the further development of the fishing industry in areas such as fish quality, operational efficiency, infrastructure and safety. These goals were achieved by providing both technical and financial assistance through the various programs of the Division.

Financial assistance provided by the Division was generally based on a 50 per cent cost-sharing arrangement with the applicant, up to a maximum contribution of $15,000. Technical assistance was also available on request for projects undertaken by industry, with emphasis being given to innovative projects or to new technological developments.

### Technology Development—Fishing Vessels and Gear

A vessel was converted to handle herring offal for transport to New Brunswick. The efforts of the owners and the Department helped alleviate a waste problem created by the lucrative herring roe fishery.

Additional work was conducted on groundfish net reels by experimenting with the deck placement of the equipment. A trial project using hydraulic arms to facilitate equipment movement was completed. Work will continue in the new fiscal year using a double drum system.

An inshore scallop rake was constructed and tested on the Eastern Shore. The drag teeth were spring loaded to permit fishing on rougher grounds. Further evaluation will be conducted during the summer of 1986.

A groundfish wash box was placed on a 44'11" dragger for further evaluation. Results have been encouraging, with fish quality showing definite improvement.

A modest grant was provided to an Eastern Passage fisherman to determine the potential for a viable shark fishery in Nova Scotia. The vessel was equipped with stainless steel longline gangions and heavy backline. Initial results were inconclusive, and further efforts will be made in the new year.

Line pull meters were placed aboard two groundfish pair seiners. After considerable time and effort it was determined that such equipment was unreliable in the test environment.

**Technology Development—Shore-Based Facilities**

The technical staff continued to provide comprehensive guidelines and consultation services on construction practices for many of the shore-based incentive programs. Onsite supervision by the Division's engineers is often necessary and they are assisted during the summer months by engineering students.

The growing aquaculture sector provided an opportunity for the involvement of the Division's engineering staff. They provided technical assistance in upgrading facilities to conform to shellfish inspection regulations.

Technical assistance was also provided to the Department's Estuarine and Inland Fisheries Division regarding the reconstruction of facilities at one of the Department's hatcheries. In addition, assistance is being provided in the construction of a new hatchery at McGowan Lake, Queens County.

With the cooperation of a Nova Scotia manufacturer, a mechanical fish smoker was developed and constructed. The unit is currently in use and will be evaluated during the next fiscal period.

Heat pump fish drying systems were equipped with monitors to determine the cost benefits to respective processing operations. Results indicate longer and more efficient production runs.

**Product Technology and Process Development**

Efforts continued to develop fish silage applications for animal and fish feeds, fish bait and fertilizers. As an on-going project, efforts will continue into the next year.

A low sodium salt fish process was developed and evaluated at a plant on the Eastern Shore. Market trials are planned for the new year.

Various sizes of deboner drums were evaluated for the mechanical separation of crab and lobster meat. The aim was to improve the quality and texture of the product. Results are being evaluated.

Negotiations began with a Nova Scotia manufacturer to transfer the lobster bait bag technology to the private sector. At year end negotiations were continuing

In conjunction with the Division's efforts in the area of fish smoking, new packaging methods were introduced for smoked fish products.

The Department's flounder definning machine was demonstrated in a number of plants for use in I.Q.F. and "boil in bag" fish products. Initial market results have been positive.

**Financial Incentives—Fishing Vessels**

Emphasis was placed on upgrading the existing fleet with 201 applications processed for the following projects:

Safety is of utmost importance to the Division and this was evident by the continuation of cost-sharing for the purchase of approved life rafts. In total, 133 applications were processed.

Twenty-four fish-hold refrigeration and insulation projects were completed under a cost-sharing arrangement. Eligible applicants had to comply with construction guidelines developed for this type of vessel upgrading.

Eight vessel owners in the inshore dragger fleet were assisted in equipping their boats with safety-related net reels.

Assistance was provided to 23 applicants equipping their vessels with onboard lobster storage tanks.

**Financial Incentives—Harbour Facilities**

The program for improving available facilities in harbours around the coast consisted of three major areas: private wharves, marine haul-outs and fishermen's service sheds.

The fishermen's service shed program assisted in the construction of seven facilities in the province. Each shed was built to departmental construction standards.

Private wharf repair and new construction was carried out by fishermen's groups and local processors. Funding to a maximum of $15,000, was available to groups of four or more fishermen or registered fish plants for approved material. Other eligible applicants received a maximum of $10,000. During the year 20 projects in this area were approved.

During the year the Department completed four cement slab haul-out facilities. Careful evaluation and follow-up were provided by technical staff.

**Financial Incentives—Infrastructure**

A number of projects were undertaken to improve existing electrical facilities in and around fish processing plants. Of primary importance was the effect such improvements would have on energy consumption.

Given the lack of adequate fresh water in many areas of the province, 50 per cent cost-sharing to a maximum of $5,000 was provided to several plants to develop or upgrade water supply systems.

**Financial Incentives—Quality**

This program area continued to be the most active and visible in relation to fish products. More than 200 applicants received assistance under two distinct sub-programs. Fish handling containers and cool and cold storage facilities provided a means for industry to upgrade the quality of its products.

Seventeen cool and cold storage projects were completed with both financial and technical assistance.

There were 208 fish handling container applications processed during the year. The majority of these requests were for insulated containers for use in plants and the road transport of fish.

**Financial Incentives—Productivity**

Two major areas of activity in this particular program were bait freezing and trawl tub storage facilities.

Thirteen bait freezing and trawl tub storage projects were completed.

Due to sufficient processing capacity in the province, funding was unavailable to plants in their initial stages of operation. To become eligible, plant operators must provide proof of operation for at least two consecutive years by means of a Department of Fisheries and Oceans plant registration certificate.

**Canada–Nova Scotia**
**Economic Regional Development Agreement—Fisheries**

The Fisheries Subsidiary Agreement between Canada and Nova Scotia was signed in October, 1984. The agreement has a total value of $50 million over five years, of which federal and provincial expenditures will amount to $35 million and $15 million, respectively. The program and budget structure are as follows:

| Sector | Five Year Budget ($000,000) Federal | Provincial |
|---|---|---|
| A. Quality Enhancement | $21.0 | $ 1.5 |
| B. Efficiency Improvement | 10.5 | 6.0 |
| C. Market Improvement | 0.5 | 2.0 |
| D. Resource Enhancement | 1.5 | 5.0 |
| E. Public Info, Evaluation and Administration | 1.5 | 0.5 |
| TOTAL | $35.0 | $15.0 |

Funding for the Agreement was approved in August, 1985, in an interim amount of $28.5 million ($20 million federal, $8.5 million provincial) for the period 1985–86 to 1988–89 and, depending on a review to be completed prior to April 1, 1987, to proceed toward the remainder of the agreement, $21.5 million ($15 million federal, $6.5 million provincial).

The agreed division of program responsibilities between the federal and provincial departments of fisheries was based, in part, on the primary areas of jurisdiction and responsibility of the respective governments in the fishery. Federal programs would tend to focus on harvesting and harbour infrastructure, whereas provincial programs would concentrate primarily in the areas of fish processing, product development, aquaculture and inland fisheries. It was understood that there would be some overlap in these areas; however, the primary emphasis would be as outlined above. It was also established that most of the agreement would be implemented on the basis of joint federal-provincial planning of programs, but with parallel delivery. That is, each government would implement its own programs, but some cost-sharing would occur on selected projects.

Due to the federal Treasury Board approval process, program implementation was delayed as it had been agreed that no project approvals would be granted until federal funding was in place. This approval was received in August, 1985, with initial project approvals made by the Management Committee in September. The first federal project approved provided a license buyout for commercial salmon fishermen who had been prevented from fishing during the year. The first provincial project approved was for the construction of a new trout hatchery.

Provincial projects are selected on the basis of the following criteria or order of priority:

1. Development—Generic
   Projects, including marketing and aquaculture development resulting in products or processes of benefit to the industry as a whole (e.g., utilization of waste products).

2. Development—Company Specific
   Research and development of primary benefit to a specific company (e.g., a new seafood product).

3. Technology Transfer
   Evaluation of technology developed elsewhere or in another sector, but not yet utilized in the fishing industry of Nova Scotia (e.g., reverse osmosis seawater desalinators).

4. Training Programs
   Includes the cost of providing training for new initiatives (e.g., dockside grading).

5. Public Facilities
   Government-owned infrastructure (e.g., hatcheries).

6. Incentive Projects
   Cost-sharing grants to encourage further use of equipment, facilities or processes proved effective to achieve specific objectives in the province (e.g., equipment related to quality improvement).

The following programs and projects were approved during the latter part of the year under review and, as such, significant portions of many project expenditures were deferred to the following fiscal year:

| | Primary Responsibility | |
|---|---|---|
| | Federal | Provincial |
| **Quality Enhancement** | | |
| Ice making and storage | * | |
| Electricity and water to processors | * | |
| Vessel fish hold upgrading | * | |
| Training for dockside grading | | * |
| **Efficiency Improvement** | | |
| Consulting services to processors | | * |
| Superchilling fillets | | * |
| Lobster holding/handling systems | | * |
| Production line monitoring/control | | * |
| Reverse osmosis water desalination | | * |
| Gutting machines on vessels | | * |
| Development of fish silage | | * |
| Heat pump dryer evaluation | | * |
| Vessel haul-outs | * | |
| **Market Development** | | |
| Seafood promotion | | * |
| Fatty acid (Omega 3) promotion | * | * |
| Ozonated water for fillets | | * |
| Market development for sea urchins | | * |
| **Resource Enhancement** | | |
| Trout hatchery | | * |
| Overwintering salmonids | | * |
| Scallop culture sites | | * |
| Hatchery development (European oyster) | | * |
| Salmon buy-back | * | |
| **Public Information, Evaluation, Administration** | | |
| Capacity and investment—processing. | * | |

## FISHERIES LOAN BOARD

During the 1985–86 fiscal year the number of loans approved continued to decline, due primarily to the low level of funding. The number of boats repossessed decreased dramatically from previous years due, in part, to the efforts of the loan officers and loan administrator in pursuing those with loans in arrears.

Ten Board meetings were held during the year and, of the 240 applications considered, 109 were approved, 51 were rejected or withdrawn, 2 were deferred and 78 were returned to the applicants because they did not qualify under the Board's regulations or were received after funding for the year had been allocated. A further 22 loans already on the books of the Board were assumed by other fishermen. Gross value of approved loans totalled $8,133,228, with the net value being $6,267,295 after down payments and subsidies. Federal subsidies and grants amounted to $307,581 on 15 applications; 277 loans were paid off during the year.

The following table compares loan activity over the past five years:

| Year Ending March 31 | Loans Considered | Loans Approved | Net Amount Approved | No. of Outstanding Loans | Amount Outstanding |
|---|---|---|---|---|---|
| 1982 | 621 | 382 | $17,481,477 | 2,261 | $107,616,697 |
| 1983 | 435 | 225 | 5,475,263 | 2,234 | 108,460,960 |
| 1984 | 307 | 175 | 5,268,848 | 2,100 | 96,065,525 |
| 1985 | 231 | 121 | 3,972,682 | 1,966 | 84,994,445 |
| 1986 | 240 | 109 | 6,267,295 | 1,774 | 74,068,949 |

In addition to the outstanding loans of $74,068,949 during the year, there were commitments of $1,556,748. Advances during the year amounted to $6,948,187 and repayments on loans amounted to $16,270,786. A further $7,237,587 was received in interest. Write-offs during the year amounted to $1,997,459.

A breakdown of the type of loans approved follows:

| | No. | Amount |
|---|---|---|
| New boats to 39'11" | 27 | $ 894,038 |
| New boats 40' to 43'11" | 11 | 590,773 |
| New boats 44' to 44'11" | 2 | 215,075 |
| New boats 45' to 64'11" | 2 | 586,200 |
| New boats 65' and over | 3 | 2,440,000 |
| Used boats to 39'11" | 3 | 31,840 |
| Used boats 40' to 43'11" | 4 | 205,600 |
| Used boats 44' to 64'11" | 5 | 671,868 |
| Diesel engines | 30 | 343,929 |
| Gas engines | 3 | 11,953 |
| Equipment | 12 | 60,041 |
| Aquaculture | 7 | 215,978 |
| | 109 | $ 6,267,295 |

Loans approved, by county, were as follows:

| | No. | Amount |
|---|---|---|
| Annapolis | — | $ — |
| Antigonish | 1 | 8,000 |
| Cape Breton | 3 | 38,597 |
| Colchester | — | — |
| Cumberland | 2 | 25,290 |
| Digby | 10 | 1,205,283 |
| Guysborough | 1 | 4,410 |
| Halifax | 8 | 218,067 |
| Hants | — | — |
| Inverness | 6 | 256,169 |
| Kings | 1 | 32,000 |
| Lunenburg | 14 | 2,396,453 |
| Pictou | 4 | 21,055 |
| Queens | 2 | 241,592 |
| Richmond | 3 | 18,234 |
| Shelburne | 24 | 719,191 |
| Victoria | 6 | 197,078 |
| Yarmouth | 24 | 885,876 |
| | 109 | $ 6,267,295 |

**Technical and Inspection Services**

During the fiscal year under review, 44 boats of all sizes were completed with Loan Board financing. Technical services were provided during both the preliminary planning and construction stages of these boats. Progress inspections were made by the inspection staff on 50 boats; at the end of the fiscal year, 6 were at various stages of construction and subject to further inspection. In addition, 33 used boats were inspected and appraised, 65 boats were inspected for engines, equipment and upgrading, and 14 boat shops and fibreglass moulds were inspected. Eight new builders were added to the Board's list of approved builders and one builder already approved for wooden boats was approved for fibreglass construction.

During the year the duties and coverage areas of the Board's inspectors were rearranged to provide more efficiency. Previously, one inspector was responsible for all maintenance and housekeeping inspections in the province; however, under the new system the province has been divided into three areas, and each inspector is responsible for all inspections in his specific area. As a result, 832 maintenance and housekeeping inspections were completed, approximately double the amount completed in the previous year.

## TRAINING AND FIELD SERVICE

### Training

The Department's training programs operated on a wide basis, serving the needs of the fishing industry, other government agencies and fishermen from overseas.

The services offered by the Division are as follows:

| | Inshore | Offshore | Processing |
|---|---|---|---|
| **Navigation** | Small Craft Master<br>Fishing Master Class IV | Fishing Master I<br>Fishing Master II<br>Fishing Master III | |
| **Engineering** | Small Gas & Diesel<br>Diesel Engines<br>Hydraulics | Watchkeeping Engineer<br>Fishing Vessel Chief Engineer<br>4th Class Engineer | Refrigeration for:<br>Small Plant Operator<br>Assistant to Plant Engineer |
| **Fishing Gear Technology** | Basic Skills in Repair & Construction | Deckhand<br>Trawlerman | |
| **Safety** | Marine Emergency Duties I<br>Fire Fighting<br>Life Saving, Survival<br>First Aid | Marine Emergency Duties II<br>Life Saving, Survival<br>First Aid | |
| **Business Practices** | Family Business Recordkeeping<br>Taxation<br>Financial Decision-Making | | Small Plant Operator Recordkeeping<br>Finance Management |
| **Quality Control** | Included in Fishing Gear Program | Included in Trawlerman Course | Production Staff<br>Fish Buyers |
| **Advisory Services** | Fishing Gear & Engineering | Design of Special Programs | Design of Special Programs |

*Transport Canada Certificate Examinations*

There continues to be a strong demand for courses in navigation and safety. The main thrust of this demand came from the inshore fleet. While there is no current regulation for Transport Canada certification of the inshore fleet, there is considerable interest in safety and navigation training leading to certification as Fishing Master Class IV.

The safety and navigation certification programs were conducted at the School of Fisheries, Pictou, and in 44 locations throughout the province.

For 1985–86 the Training and Field Service Division achieved a high success rate in Transport Canada Navigation Certificate examinations, results of which are as follows:

| Transport Canada Certificate | Number of Courses | Number of Fishermen Passed |
|---|---|---|
| Fishing Master Class IV | 16 | 183 |
| Fishing Master Class III | 4 | 48 |
| Fishing Master Class II | 3 | 32 |
| Marine Emergency Duties (M.E.D.) | 15 | 198 |

*Extension Programs In Fishing Communities*

A breakdown of the training programs conducted in fishing communities is as follows:

| | No. of Courses | Students Completed |
|---|---|---|
| Navigation | 12 | 141 |
| Inshore Fishing Operations | 17 | 243 |
| Business Practices | 5 | 72 |
| M.E.D. | 16 | 187 |
| Small Gas Engines | 6 | 60 |

The planning and coordination of the programs in the fishing communities are facilitated through the work of the Department's fisheries representatives and the cooperation of Canada Manpower officials. Funding for the courses at Pictou and the extension programs is provided through Canada Employment and Immigration and is administered by arrangement with the joint Federal/Provincial Institution Training Committee.

*Nova Scotia School of Fisheries, Pictou*

A breakdown of the courses conducted at Pictou is as follows:

(a) Programs under Canada Manpower Institutional Training Program:

| | No. of Courses | Students Completed |
|---|---|---|
| Navigation | 11 | 120 |
| M.E.D. | 11 | 152 |
| Deckhand | 1 | 15 |
| Chief Engineer | 3 | 32 |
| Inshore Fishing | 1 | 15 |

(b) Overseas Fishery Training

This is a joint venture between the Department and the Canadian International Development Agency (CIDA/VADA).

Fishermen from Antigua, St. Christopher, Nevis and the British Virgin Islands participated in a six-week program consisting of four courses: Diesel Engine Maintenance, Net and Gear Technology, Outboard Engines and Navigation.

*Training Summary*

The followiing table indicates the extent of fisheries training conducted over the past five years:

| | 1981-82 | 1982-83 | 1983-84 | 1984-85 | 1985-86 |
|---|---|---|---|---|---|
| Number of Courses | 112 | 77 | 65 | 76 | 71 |
| Number of Trainees | 1,141 | 779 | 824 | 1,001 | 896 |
| Number Trained | 1,107 | 763 | 824 | 1,001 | 896 |

*Quality Control*

Courses in dockside grading were held in Clarke's Harbour, Cheticamp, Digby and Pictou with 58 participants. All were successful in achieving certification. However, due to uncertainty over the implementation of dockside grading standards and lack of funding for this program, no further courses are planned.

**Field Service**

The fiscal year 1985–86 was an active one for the Field Service despite budget reallocations from some traditional areas of operation.

Applications to the Industrial Development Division for assistance, described elsewhere in this report, were taken by the fisheries representatives and rated according to impact and priority in the industry. Several hundred applications were handled and progress on approved projects was monitored. Technical information was often supplied by the fisheries representatives.

Confidential reports on loan applicants were completed by the Field Service for the Fisheries Loan Board. Assistance to fishermen in finding boat builders or used boats was a common occurrence. Encouraging fishermen to bring loans up to date was a significant function. Supplying financial advice, forms and additional loan information continued to take considerable time and effort.

All the Department's training courses were promoted and, to a large extent, coordinated by Field Service staff. Fishermen were also encouraged to attend courses offered at the School of Fisheries in Pictou.

In all nine geographic regions, solving local problems and liaison aspects remained components of the Field Service. Besides handling many individual and collective problems of fishermen, the fisheries representatives relayed requests for improved harbour facilities, navigational aids, and licensing matters to federal departments for consideration.

Dispensing information on government programs and policies continued to be important. In addition, staff participated in industry meetings, exhibitions and career days. Fisheries representatives also served on a number of management and related committees.

Proposed dumpsites for dredging spoils were checked with local fishermen and the findings transmitted to the Department of Environment. Where good fish bottom could be destroyed or impaired, alternate dumpsites with accurate coordinates were suggested.

Employment projects were sponsored by the fisheries representatives during the year. The exact number of jobs created is hard to ascertain because in some instances fishermen and plant owners acted as the official sponsors.

Aquaculture received increased emphasis from all members of the Field Service and, at year's end, three of the fisheries representatives were appointed aquaculture inspectors. It is envisaged that even more attention will be given to both fin and shellfish rearing in future as the Aquaculture Act and Regulations are promoted and enforced.

In addition, the Field Service was involved with the Department of Lands and Forests in administering fishermen's reserves, land acquisition and disposal.

## MARINE RESOURCES DIVISION

The Marine Resources Division represents the department and the fishing industry of the province on numerous government-industry advisory committees. Its function is to ensure that the needs of the industry are adequately considered in the development and implementation of management plans for the various fisheries in which provincial fishermen participate. This year the Division was represented on 44 official advisory committees dealing with groundfish, pelagics, scallops, marine plants and crustaceans, as well as advising on bilateral agreement discussions with foreign nations. The Division also represented the Department on five offshore oil and gas committees, and the Division Director is co-chairman of the joint Nova Scotia-Canada Fisheries Advisory Committee as provided for in the Canada-Nova Scotia Offshore Petroleum Resources Accord. Through the oil and gas committees, the Department ensures minimal interference with the fishing industry as a result of offshore exploration and development and interacts directly with the Canadian Oil and Gas Lands Administration, along with other federal and provincial departments involved in authorizing offshore activity.

The Resource Management and Research section of the Division is divided into three units, each dealing with a particular species group. This year a resource management officer for groundfish was added to the Division, which already includes resource management officers for invertebrates and pelagic fish. As well as providing expertise in their specific fields for management of the resource, the latter two of these units are involved in research programs investigating species and stocks of specific interest to Nova Scotia. These studies are important to the development of new fisheries for the future and to improved management for the present. These programs involve considerable field work for which students are employed. Details of these studies follow:

### Invertebrates

In 1985 the Division continued its research program to investigate various aspects of the growth, survivorship and behaviour of stage four juvenile lobsters. Hatchery-reared animals were placed on the ocean bottom at selected sites in Guysborough County. Their response to various conditions was observed and the impact of their addition to the benthic community was assessed. Work is continuing to better understand the early life stages of the lobster in an attempt to determine the effect of releasing large numbers of juveniles and the potential of artificial stock enhancement.

A lobster hatchery located at Dalhousie University provided about 25,000 stage four juveniles for field study last year. These lobsters were used for field research programs.

In 1985 the Division participated in port sampling programs collecting information on lobster, crabs and scallops at fishing ports around the province. Biological data, including size frequencies, catch effort and reproductive potentials, were gathered and will be used to assess the fisheries as they exist and to project how they may respond in future. Special interest was given to lobster area 26 (formerly district 7b), where efforts are underway to increase the size limit along the Inverness County coastline.

**Pelagic Fish**

Sampling of the Nova Scotia Gulf Coast herring fishery continued in 1985 to assess the stock characteristics of size and age composition, growth and roe maturity. The data will be used in the stock assessment of regional components of the Gulf fishery.

Gaspareau stocks from the South West Margaree River and Pictou region were again studied. Additional emphasis was placed on the latter region due to the habitat alteration of the Pictou Causeway reservoir from freshwater to saltwater and the potential of the Middle River reservoir for Gaspareau production. Adult population dynamics were examined utilizing data from tag returns, age composition, catch and effort. Studies of the early life history of the Gaspareau investigated the role of biotic and abiotic factors in recruitment variability. Fat content was determined in migrating Gaspareau to assess species differences, fat depletion during migration, and as a factor in fish quality and spoilage. Technical reports on these studies are available.

## ESTUARINE AND INLAND FISHERIES

This division is responsible for planning, developing and conducting departmental policies and programs to conserve and enhance the fisheries resource at the land-water interface. Major responsibilities include:

1. producing, distributing and stocking some 750,000 trout to about 130 lakes throughout the province, conducting stream habitat inventories for trout enhancement and providing technological advice on the construction and operation of private fish ponds;

2. conducting pilot-scale studies, applied research and extension work associated with the development and management of aquaculture opportunities in finfish and shellfish in estuarine and inland waters;

3. providing departmental advice and technical expertise to both provincial and federal agencies and intergovernmental committees concerned with managing the resource base in the coastal zone; and

4. carrying out resource inventories of estuarine species for advice concerning resource management decisions, commercial development and land use planning.

Divisional headquarters is maintained at the Fisheries School in Pictou. Regional operational facilities include an experimental shellfish hatchery and demonstration site at Pleasant Point, Halifax County and trout production facilities at Fraser's Mills, Antigonish County and St. Peter's, Richmond County, providing trout for public lake enhancement, private pond operation and aquaculture. A new trout production facility is presently under construction at McGowan Lake, Queens County.

In March of this fiscal year a major Federal-Provincial Agreement was signed providing for the Division to assume a leading responsibility for the orderly development of aquaculture in Nova Scotia. During the next year it is anticipated that administrative coordination will be completed allowing for "one stop" issuing of aquaculture licenses and leases. In addition, the Division will be responsible for collecting statistics, developing education and training programs, carrying out applied research and development and enforcing the Aquaculture Act and Regulations.

Division staff serve on a number of government and non-government committees and perform extension services to both the recreational and commercial components of inland fisheries and aquaculture development.

**Aquaculture Development**

*Site Inspections*

The program of free preliminary site inspection, water sampling and provision of technical advice for new aquaculturists in the province was continued. A breakdown is as follows:

| | |
|---|---|
| Mussels | 27 |
| Oysters | 5 |
| Salmonids | 2 |
| Other | 1 |

*Seed Sale Program*

Seed sales to growers during the year under review were as follows:

| | | |
|---|---|---|
| Mussels | 2,430 | collectors with seed |
| Oysters: | | |
| *O. edulis* | 913,000 | sold |
| *C. virginica* | 25,000 | for department use |
| Quahaugs | 23,000 | sold |

With the construction of a pilot-scale commercial hatchery at Fink Cove, it was decided the Department would discontinue production of *O. edulis* seed.

*Temperature Monitoring*

During the autumn a chart survey was conducted to identify areas that may hold sufficiently high mid-winter temperatures to permit overwintering of salmonids. Through January and February the selected sites were visited bi-weekly to measure water temperature. Preliminary results have confirmed that areas of near surface seawater with temperatures above 0°C during mid-winter are confined to a few well-sheltered coves and salt ponds and widely scattered throughout the province.

A report detailing the survey will be available early in the next fiscal year.

*New Research: Bay Scallops (Argopectan irradians)*

With the cooperation of the Department of Fisheries and Oceans, Gulf Region, and the Prince Edward Island Department of Fisheries, a group of Bay Scallops was transferred from PEI to the Pleasant Point hatchery to determine whether these animals could survive overwintering in our waters.

They were held in lantern nets suspended in Pleasant Point Pond until mid-December, then brought into the hatchery. They spawned in February, and by mid-March counts showed approximately 15,000 scallop spat. These seed will be outplanted in May when winter temperatures reach 10°C.

*Large Particle Setting Techniques*

A demand by industry for individual oyster seed led to investigation of a number of cultchless production techniques that have proved costly. During the fiscal year a new technique was tried using large shell chips as a spat settling medium. The efficiency of this method will not be known until late in the fiscal year, when survival and shell shape can be determined.

*Publications*

A major report entitled "Cultivation of the European Flat Oyster *Ostrea edulis* in Nova Scotia: General Growth and Economic Model" was completed and published. The report presents a comprehensive history of *Ostrea edulis* in the province and details the Division's work and test results over a seven-year period. Using growth results from numerous studies at four major sites, the report provides a detailed production model and projected cash flow for a farm purchasing 500,000 seed and with annual sales of 300,000 oysters.

Copies of the report may be obtained from the Department.

*Extension Work*

As in previous years, extension services provided to industry and others were significant as public interest in aquaculture continued to increase. A summary is as follows:

| | |
|---|---|
| Telephone/written contacts | 3,300 |
| Visits/tours to hatchery | 109 |
| Conferences | 3 |

**Inland Fisheries**

*Production and Distribution*

Inland fisheries activities expanded during the year in response to increasing demands from the recreational sector for enhancement efforts. Under the Federal-Provincial Agreement on Trout, federal hatcheries produced 250,000 fish for the province, with the remainder being reared at the Department's hatcheries at Fraser's Mills and St. Peter's. The primary function of the latter facility remains the supply of seed stock Rainbow trout for aquaculture; however, the hatchery also produces fish for enhancement of the recreational fishery.

Fish distribution was within the following program areas:

| | |
|---|---|
| Fall fingerlings (wild replenishment) | 554,426 / 152 sites |
| Spring yearlings (urban recreational) | 299,690 / 93 sites |
| Egg and fry (public participation) | 1,800,000 / 700 volunteers |
| Aquaculture (private pond) | 821,678 / 150 sites |
| Research | 14,800 |

*Research and Enhancement Programs*

An additional 400 km of trout stream habitat were detailed and added to the Department's data bank to be utilized as baseline data for enhancement opportunities and by researchers involved in a variety of associated activities.

In cooperation with the Nova Scotia Department of Environment and the federal Department of Fisheries and Oceans, water samples were collected from selected sites to document pH deflections resulting from acidic precipitation.

A long-term study of the potential for using flood retardation devices (low head weirs) on the Gold River was completed. The report includes suggestions on design, location, employment and projected effects.

A study was conducted on the population dynamics of chain pickerel in Yarmouth County and their implication on salmonid management in the area.

A detailed study of the Mersey River salmonid potential was conducted to determine the value of natural resources in the development of a trout fishery in the NSPC hydro-resevoir system. Of particular interest were original river bed areas and their ability to manipulate temperature and pH.

A cooperative effort was undertaken with the Digby County Fish and Game Association to enhance the native strain of trout from the Sissiboo River by live capture of natives for breeding, hatchery rearing and distribution of progeny to their origin.

The Division maintained the angling prohibition imposed on Giant's, Sullivan and Magginist Lakes in Guysborough County to permit continued research on Speckled trout broodstock development.

Efforts continued on the enhancement of landlocked salmon, brown trout, lake trout and steelheads in selected areas of the province. This year, 100,000 steelheads were distributed.

Detailed population estimates were conducted on the 20 indexed streams in the province that were selected as representative for each of their respective areas. This effort provides an assessment ofenhancement techniques as well as being indicative of the relative health of the provincial resource.

Efforts continued to develop an improved genetic strain of trout, an ongoing project during the past 12 years. The latest variety is used in the public participation programs.

*Extension Services*

Work continued on both the Education Package for the public school system and the Recreational Fishing Map. The Education Package was nearing completion at year end and is expected to be in use in the next fiscal year. The Recreational Fishing Map has undergone several revisions and is in the final artwork stages.

As a result of inspection services to finfish aquaculture sites, 40 locations were visited; an additional 18 emergency visits were necessitated by excess mortalities in fish stocks. The services of Dr. Robin MacKelvie, retired research scientist with the Department of Fisheries and Oceans, were offered to aquaculturists regarding fish health matters.

Public extension services are summarized as follows:

| | |
|---|---|
| Hatchery visitors | 12,000 |
| Meetings and conferences | 66 |
| Inquiry responses | 1,280 |

## MARKETING

This division provides diverse services to all levels of the fishing industry as well as to the seafood retail sector, foodservice industry and the general public. Support services offered by the Division are directed toward increasing the sales potential of seafood and enhancing the marketing of seafood products to consumers.

### Market Development and Promotion

(a) General

The role of this section is, first, to provide comprehensive and timely information to the fishing industry on seafood market opportunities worldwide, as well as to ensure that information on Nova Scotia seafood exporters and products is available internationally. Second, the Section assists in the promotion of Nova Scotia seafood both within and outside of the province.

(b) Trade Considerations

Early in the year, extensive preparations were undertaken in conjunction with other government departments and agencies as a result of the United States' initiation of countervailing duty action against Canadian exports of fresh groundfish. This work culminated in onsite verification of Nova Scotia Department of Fisheries programs by the United States Department of Commerce.

(c) Seafood Publications

The selection and availability of promotional material was improved during the year with one new recipe pamphlet and point-of-sale seafood stickers for 12 species added to the existing collection of selling aids. More than 1.5 million stickers were used by the retail sector. In excess of 800,000 recipe pamphlets, seafood posters and other promotional materials were distributed to retailers, food service operators and the general public during the fiscal year.

The *Directory of Nova Scotia Fish Products* and the *Retail Outlets* pamphlet are reprinted annually to reflect up-to-date information. The *Directory* is a buyer's guide for seafood produced in the province and is distributed internationally. The *Retail Outlets* pamphlet lists the many outlets within the province where fresh and frozen seafood may be purchased by consumers.

(d) Food Shows and Demonstrations

The Department participated at Seafood '86 in Boston, the most important seafood trade show held in the United States. Provincial companies participating were provided with display equipment and home economist services. This event continues to improve each year and is considered to be a highly effective trade show in relation to our significant market in the New England and Northeastern U.S. regions.

The Department's home economists continued to provide support services as seafood sample preparation for processors and exporters attending national and international food shows.

Within the province the Department conducted numerous seafood cooking demonstrations at exhibitions, shopping malls, consumer shows such as Atlantic Winter Fair and Food Extravaganza as well as at other public events. Such promotions aim to increase the Nova Scotia consumer's awareness of seafood and how to prepare it. In addition, seafood information is frequently provided on radio shows aimed at the homemaker, and recipes and other helpful hints are carried by newspapers in the province. During the fall workshops were conducted for food service operators to increase their awareness of the many species and methods of preparation available with the view to expanding the number of seafood items on restaurant menus. Retailing workshops were conducted for major supermarket chains in the process of expanding their seafood merchandizing efforts.

(e) November Fish and Seafood Month

During November a major radio campaign focused attention on seafood. The promotion was begun with a media reception. Contests for the consumer were run in conjunction with the radio campaign, which urged consumers to make seafood a regular item in their menu planning.

(f) Nova Scotia Seafood Cookery

Sales of the Department's seafood cookbook continued to be steady. By year end, a total of about 10,500 copies of the book had been sold throughout Canada.

(g) Fishery Exhibitions

The Department was represented at the Nova Scotia Fisheries Exhibition in Lunenburg. As well, small exhibits were placed in several community exhibitions, such as the North Sydney Wildlife Association show.

## ADMINISTRATIVE SERVICES

This division provides administrative support to the Department as a whole, including financial, personnel and office services. In addition, planning, economics, statistical services and data processing are provided to the Department.

Some of the major projects undertaken by the Division during the year under review include:

### Economic Studies and Projects

(a) Fisheries Cost and Earnings Study

The cost and earnings study of fishing vessels in Nova Scotia has continued as a joint project with the federal Department of Fisheries and Oceans. Capital cost and operating data from a representative sample of various types of fishing vessels were collected and analyzed to produce an annual report summarizing the economic performance of each vessel class in the fleet.

The information from this ongoing study is used by government and the industry for a variety of purposes, including financial analysis of investment in fishing craft, comparing the performance of various types of vessels and fishing gear, and assessing the impact of specific cost and earnings factors such as increasing energy costs, vessel licensing policies and decreased groundfish quotas on fleet viability.

(b) Resource Atlas

As part of the *Nova Scotia Resource Atlas*, published by the Department of Development, fisheries information was assembled, collated and described in a comprehensive manner relating to the primary resource base.

The *Atlas* contains salient information covering all facets of the fishery with regard to significant species, landings and value, processing plants, products and facilities, as well as the fishing fleet, associated industries and fisheries infrastructure. All information is presented in a pictorial and tabular format delineated on a regional basis within the province.

(c) Other Economic Projects

An investigation was conducted into the level of government expenditures on fisheries throughout Canada. This included both federal and provincial governments, as well as non-fishery-related departments and programs within government, such as the Unemployment Insurance Program and the Departments of Regional Industrial Expansion, Transport and External Affairs.

An analysis of fisheries production statistics was undertaken and compared to fisheries export and landing data to determine the level of discrepancies that might exist between production volumes and the recorded landed weight equivalent in Nova Scotia. A difference of nearly 20 per cent was found between the two.

Under the (terms and conditions of the) Federal-Provincial Agreement on Aquaculture Development, the Department is responsible for the collection of aquaculture production statistics to be used by both levels of government in developing policies and programs to foster the aquaculture resource. To this end, questionnaires were devised and distributed to gather the statistical information from the aquaculture sector beginning in calendar year 1986.

**Administrative Information and Control System**

During the year a decision was reached to move the Fisheries Loans system to the government mainframe to eliminate most of the ongoing system difficulties. Design work began near the end of the fiscal year with transfer to occur near the end of the next fiscal period. Plans also were made to upgrade the HP-250 hardware to handle three new applications and to upgrade the Pictou installation.

**Weatheradio Canada**

This system is cost-shared between the Department and Environment Canada and has proved successful in disseminating weather data both to marine users and to the general public. During the year several refinements were made to the service to fishermen, including the provision of sea-state information.

## STATISTICAL REVIEW

All fisheries production statistics given here for the calendar year 1985 are revised figures supplied through the courtesy of the federal Department of Fisheries and Oceans. The statistics may be subject to minor adjustments as late returns from firms and individuals are received and processed in that department.

### Nova Scotia Fisheries Major Species Landings of those Species Yielding Over One Million Dollars Annually

**(listed in descending order of value in 1985)**

| | | Landings (Metric Tons) | | Value ($,000) | |
|---|---|---|---|---|---|
| | | 1985 | 1984 | 1985 | 1984 |
| 1. | Lobster | 13,043 | 12,431 | $94,210 | $81,449 |
| 2. | Cod | 148,558 | 144,909 | 68,646 | 56,962 |
| 3. | Scallops | 38,331 | 28,549 | 49,363 | 43,481 |
| 4. | Haddock | 34,017 | 31,297 | 26,695 | 22,137 |
| 5. | Herring | 99,784 | 68,641 | 15,327 | 9,810 |
| 6. | Pollock | 41,503 | 33,452 | 10,668 | 8,007 |
| 7. | Halibut | 2,988 | 2,779 | 10,514 | 8,928 |
| 8. | Flounders | 17,016 | 22,069 | 9,895 | 8,958 |
| 9. | Redfish | 26,209 | 21,052 | 6,516 | 5,206 |
| 10. | Crabs | 2,784 | 2,673 | 3,769 | 4,196 |
| 11. | Swordfish | 573 | 539 | 2,894 | 2,551 |
| 12. | Shrimp | 1,127 | 1,878 | 3,557 | 3,607 |
| 13. | Hake | 10,221 | 7,926 | 3,211 | 2,305 |
| 14. | Mackerel | 6,043 | 6,040 | 1,676 | 1,652 |
| 15. | Clams | 1,498 | 1,816 | 1,631 | 1,568 |
| 16. | Cusk | 2,375 | 3,126 | 1,179 | 1,296 |

**Table I**

**Nova Scotia Fisheries**
**Landed and Marketed Value**
**1950 – 1985**

**(Value in $,000)**

| Year | Landed Value | Marketed Value |
|---|---|---|
| 1950 | $ 21,400 | $ 38,819 |
| 1955 | 23,582 | 47,093 |
| 1960 | 26,094 | 51,753 |
| 1965 | 49,371 | 93,443 |
| 1970 | 55,652 | 105,939 |
| 1975 | 91,010 | 208,574 |
| 1980 | 230,911 | 438,799 |
| 1981 | 263,727 | 484,182 |
| 1982 | 259,411 | 523,191 |
| 1983 | 276,451 | 497,664 |
| 1984 | 265,335 | 533,500 |
| 1985 | 312,733 | 562,919[1] |

[1]This is an estimate based on recent average past relationships between landed and marketed values.

**Table II**
**Nova Scotia Fisheries**
**Landings and Landed Value by Species Group**

| | Landings (Metric Tons) | | Value ($,000) | |
|---|---|---|---|---|
| | **1985** | **1984** | **1985** | **1984** |
| Groundfish | 286,886 | 270,157 | $138,703 | $114,825 |
| Pelagic and Estuarial | 107,807 | 77,024 | 20,444 | 15,290 |
| Molluscs and Crustaceans | 56,889 | 47,443 | 152,589 | 134,393 |
| Miscellaneous[1] | 9,652 | 8,106 | 997 | 827 |
| | 461,234 | 402,730 | $312,733 | $265,335 |

[1]Seaweeds, worms, livers, tongues, scales, roes, liver oil, skins.

**Table III**
**Landed Value of Fisheries by County**

| County[1] | Landed Value[2] ($,000) | | Per Cent Change[3] |
|---|---|---|---|
| | 1985 | 1984 | 1984–85 |
| Shelburne | $ 68,975 | $ 54,232 | + 27.2 |
| Lunenburg | 52,577 | 37,588 | + 39.9 |
| Yarmouth | 41,790 | 37,308 | + 12.0 |
| Digby | 38,853 | 34,218 | + 13.5 |
| Cape Breton | 26,297 | 24,882 | + 5.7 |
| Guysborough | 25,247 | 22,093 | + 14.3 |
| Halifax | 13,582 | 9,635 | + 41.0 |
| Queens | 11,512 | 11,525 | − 0.1 |
| Inverness | 10,423 | 10,990 | − 5.2 |
| Victoria | 7,115 | 6,320 | + 12.6 |
| Richmond | 5,698 | 4,805 | + 18.6 |
| Pictou | 4,151 | 4,562 | − 9.0 |
| Antigonish | 2,229 | 2,588 | − 13.9 |
| Cumberland | 1,594 | 2,083 | − 23.5 |
| Colchester | 1,188 | 828 | + 43.5 |
| Annapolis | 963 | 1,176 | − 18.1 |
| Kings | 523 | 482 | + 8.5 |
| Hants | 16 | 20 | − 20.0 |
| | $312,733 | $265,335 | + 17.9 |

[1]Counties listed in order of the 1985 landed value.

[2]Landed value includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

[3]Increase (+); decrease (−).

**Table IV**
**Landed Weight of Fisheries by County**

| County[1] | Landed Weight[2] (Metric Tons) | | Per Cent Change[3] |
|---|---|---|---|
| | 1985 | 1984 | 1984/85 |
| Lunenburg | 73,342 | 60,050 | + 22.1 |
| Shelburne | 72,993 | 64,534 | + 13.1 |
| Digby | 66,038 | 51,795 | + 27.5 |
| Yarmouth | 65,628 | 50,556 | + 29.8 |
| Guysborough | 60,558 | 53,780 | + 12.6 |
| Cape Breton | 49,969 | 52,498 | − 4.8 |
| Halifax | 15,472 | 11,803 | + 31.1 |
| Richmond | 14,326 | 13,670 | + 4.8 |
| Inverness | 13,579 | 16,763 | − 19.0 |
| Queens | 12,791 | 11,709 | + 9.2 |
| Victoria | 6,774 | 7,263 | − 6.7 |
| Pictou | 4,706 | 3,721 | + 26.5 |
| Antigonish | 2,777 | 2,016 | + 37.7 |
| Colchester | 856 | 749 | + 14.3 |
| Annapolis | 579 | 989 | − 41.5 |
| Cumberland | 441 | 539 | − 18.2 |
| Kings | 388 | 274 | + 41.6 |
| Hants | 17 | 21 | − 19.0 |
| | 461,234 | 402,730 | + 14.5 |

[1]Counties listed in order of the 1985 landed weight.

[2]Landed weight includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

[3]Increase (+); decrease (−).

## Table V

## Landed Weight and Landed Value of Fisheries by Species Group by County (1985–1984)

| County | Species Group[1] | Landed Weight (Metric Tons) | | Landed Value ($,000) | |
|---|---|---|---|---|---|
| | | 1985 | 1984 | 1985 | 1984 |
| Annapolis | Groundfish | 147 | 382 | $ 83 | $ 228 |
| | Pelagic | – | 8 | – | 4 |
| | Shellfish | 432 | 598 | 880 | 942 |
| | Other | – | 1 | – | 2 |
| Antigonish | Groundfish | 1,072 | 997 | 421 | 326 |
| | Pelagic | 1,181 | 535 | 228 | 338 |
| | Shellfish | 524 | 484 | 1,580 | 1,924 |
| | Other | – | – | – | – |
| Cape Breton | Groundfish | 44,881 | 43,799 | 19,012 | 15,174 |
| | Pelagic | 3,935 | 5,015 | 657 | 776 |
| | Shellfish | 1,148 | 3,677 | 6,616 | 8,923 |
| | Other | 5 | 7 | 12 | 9 |
| Colchester | Groundfish | 19 | – | 23 | – |
| | Pelagic | 11 | 1 | 13 | 1 |
| | Shellfish | 826 | 748 | 1,152 | 827 |
| | Other | – | – | – | – |
| Cumberland | Groundfish | 1 | 10 | – | 4 |
| | Pelagic | 152 | 39 | 47 | 17 |
| | Shellfish | 288 | 490 | 1,547 | 2,062 |
| | Other | – | – | – | – |
| Digby | Groundfish | 30,110 | 26,667 | 16,991 | 12,989 |
| | Pelagic | 25,872 | 15,276 | 3,839 | 1,941 |
| | Shellfish | 10,052 | 9,847 | 18,018 | 19,282 |
| | Other | 4 | 5 | 5 | 6 |
| Guysborough | Groundfish | 51,409 | 45,515 | 19,428 | 16,496 |
| | Pelagic | 7,923 | 6,373 | 1,085 | 1,021 |
| | Shellfish | 1,226 | 1,892 | 4,733 | 4,576 |
| | Other | – | – | – | – |

**Table V Continued**

| County | Species Group[1] | Landed Weight (Metric Tons) | | Landed Value ($,000) | |
|---|---|---|---|---|---|
| | | 1985 | 1984 | 1985 | 1984 |
| Halifax | Groundfish | 12,187 | 9,203 | $ 8,188 | $ 5,961 |
| | Pelagic | 2,547 | 2,069 | 1,308 | 798 |
| | Shellfish | 738 | 531 | 4,086 | 2,876 |
| | Other | — | — | — | — |
| Hants | Groundfish | 4 | 7 | 2 | 7 |
| | Pelagic | 13 | 15 | 14 | 13 |
| | Shellfish | — | — | — | — |
| | Other | — | — | — | — |
| Inverness | Groundfish | 10,627 | 12,749 | 4,559 | 4,509 |
| | Pelagic | 447 | 1,442 | 114 | 317 |
| | Shellfish | 2,505 | 2,569 | 5,750 | 6,162 |
| | Other | — | 3 | — | 2 |
| Kings | Groundfish | 143 | 118 | 126 | 81 |
| | Pelagic | 214 | 120 | 136 | 78 |
| | Shellfish | 29 | 36 | 258 | 323 |
| | Other | 2 | — | 3 | — |
| Lunenburg | Groundfish | 46,741 | 45,247 | 16,690 | 14,376 |
| | Pelagic | 2,693 | 2,190 | 566 | 429 |
| | Shellfish | 23,908 | 12,613 | 35,321 | 22,783 |
| | Other | — | — | — | — |
| Pictou | Groundfish | 270 | 402 | 94 | 144 |
| | Pelagic | 3,590 | 2,202 | 635 | 352 |
| | Shellfish | 846 | 1,117 | 3,422 | 4,066 |
| | Other | — | — | — | — |
| Queens | Groundfish | 8,999 | 7,815 | 5,227 | 4,976 |
| | Pelagic | 778 | 827 | 160 | 736 |
| | Shellfish | 3,014 | 3,067 | 6,125 | 5,813 |
| | Other | — | — | — | — |
| Richmond | Groundfish | 13,506 | 13,127 | 4,169 | 3,795 |
| | Pelagic | 595 | 359 | 184 | 88 |
| | Shellfish | 225 | 184 | 1,344 | 922 |
| | Other | — | — | 1 | — |

**Table V Continued**

| County | Species Group[1] | Landed Weight (Metric Tons) | | Landed Value ($,000) | |
|---|---|---|---|---|---|
| | | 1985 | 1984 | 1985 | 1984 |
| Shelburne | Groundfish | 53,581 | 52,777 | $35,760 | $30,189 |
| | Pelagic | 8,869 | 2,778 | 3,485 | 1,884 |
| | Shellfish | 3,811 | 3,060 | 29,228 | 21,671 |
| | Other | 6,732 | 5,919 | 502 | 488 |
| Victoria | Groundfish | 3,689 | 3,431 | 1,889 | 1,370 |
| | Pelagic | 2,138 | 2,661 | 563 | 1,057 |
| | Shellfish | 947 | 1,171 | 4,663 | 3,893 |
| | Other | — | — | — | — |
| Yarmouth | Groundfish | 9,498 | 7,910 | 6,041 | 4,200 |
| | Pelagic | 46,850 | 35,114 | 7,410 | 5,440 |
| | Shellfish | 6,372 | 5,361 | 27,865 | 27,348 |
| | Other | 2,908 | 2,171 | 474 | 320 |

[1] Pelagic includes pelagic and estuarial.
Shellfish includes molluscs and crustaceans.
Other includes livers, tongues, scales, roe and oil, sea plants, mammals, worms.

**Table VI**

**Atlantic Provinces Landings and Landed Value—1985**

| | Landed Weight (Metric Tons) | Landed Value ($,000) |
|---|---|---|
| Nova Scotia | 461,234 | $312,733 |
| Newfoundland | 457,000 | 161,500 |
| New Brunswick | 127,200 | 81,500 |
| Prince Edward Island | 33,000 | 40,000 |

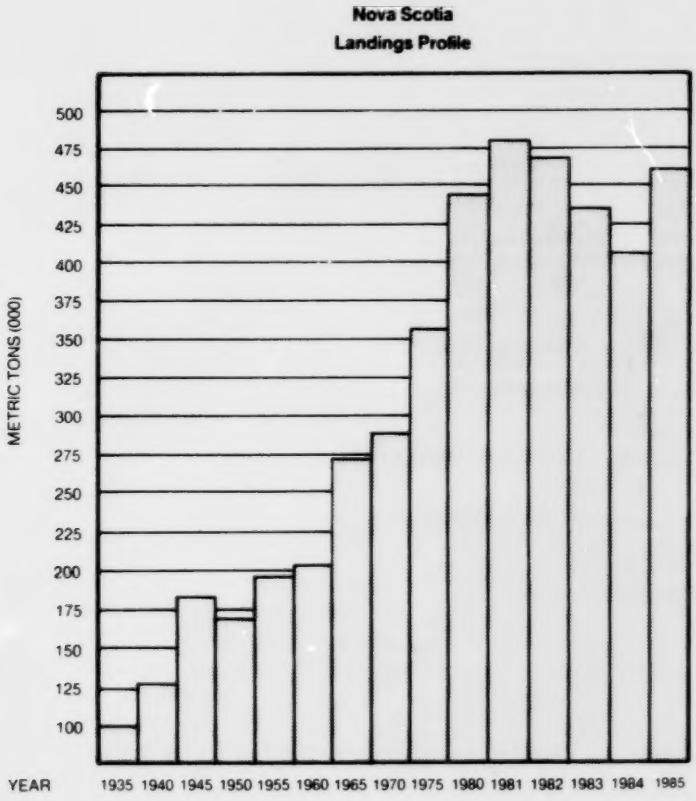
## Table VII

## Nova Scotia Fishery Profile
## Employment

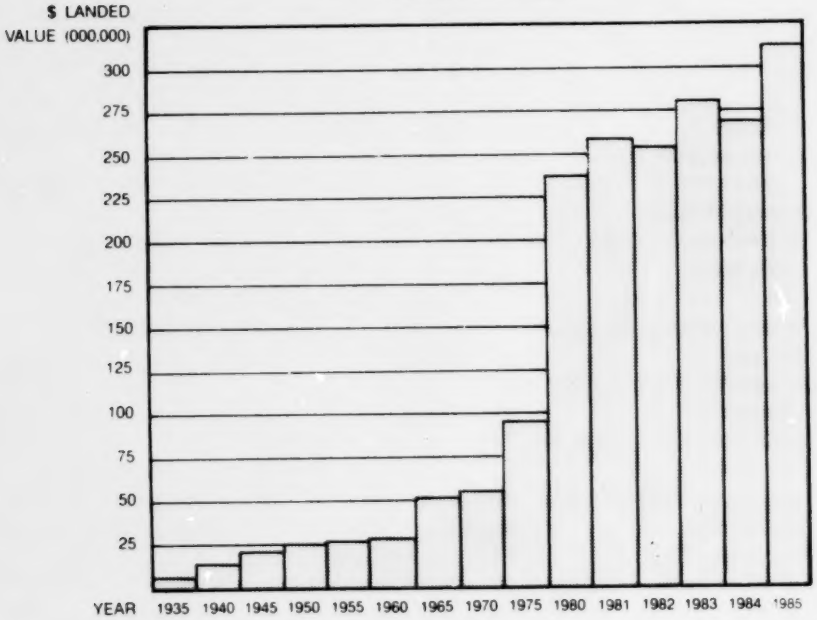
| | | |
|---|---|---|
| Fishermen | | |
| Full-time (10 months or more, 1985) | | 7,414 |
| Part-time (1-10 months, 1985) | | 6,544 |
| | TOTAL | 13,958 |
| Plant Workers—Yearly Average, 1985 | | 6,200 |
| Registered Fish Processing Establishments, 1985 | | 283 |

### Fishing Craft

| Length (ft.) | Number of Boats/Vessels |
|---|---|
| Less than 35 | 3,567 |
| 35–39.9 | 1,149 |
| 40–44.9 | 930 |
| 45–49.9 | 31 |
| 50–54.9 | 25 |
| 55–59.9 | 37 |
| 60–64.9 | 114 |
| 65–99.9 | 41 |
| 100 and over | 113 |
| TOTAL | 6,007 |


Nova Scotia
Landings Profile
METRIC TONS (000)
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
YEAR
1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1981 1982 1983 1984 1985

**Nova Scotia**
**Landed Value Profile**



## DEPARTMENT OF FISHERIES PERSONNEL

Telephone 424-4560 — Halifax
485-8011 — Pictou
485-5056 — Pictou

| | | |
|---|---|---|
| **Minister** | **Hon. John G. Leefe** | **Halifax** |
| Secretary to the Minister | Mrs. S.M. Grandy | Halifax |
| **Deputy Minister** | **D.A. (Sandy) MacLean** | **Halifax** |
| Secretary to the Deputy Minister | Miss M.L. Evans | Halifax |
| **Finance and Administration Division** | | |
| Director | J.A. Marsters | Halifax |
| Supervisor, Socio-Economic Support | D.C. Thomas | Halifax |
| Supervisor, Administrative Services | C.G. Allen | Halifax |
| Personnel/Payroll Clerk | Mrs. D.A. Boudreau | Halifax |
| Accounting Clerk | P.J. Foran | Halifax |
| Accounting Clerk | Mrs. N.A. Wallace | Halifax |
| Clerk Typist | Miss S.J. Kane | Halifax |
| Clerk Receptionist | Miss J. Wilson | Halifax |
| Equipment Officer | F.S. MacKay | Pictou |
| **Marketing Division** | | |
| Director | Ms. J.L. Raymond | Halifax |
| Secretary to the Director | Ms. J.L. Ganner | Halifax |
| Seafood Consultant | Mrs. A.E. Bryant | Halifax |
| Information and Promotions Officer | K.R. Weston | Halifax |
| Home Economist | Ms. M.C. O'Neil | Halifax |
| **Marine Resources Division** | | |
| Director | A.A. Longard | Halifax |
| Supervisor, Crustacean Resources | S.G. Roach | Halifax |
| Resource Management Officer | P.C. Underwood | Halifax |
| Resource Management Officer | R.H. Crawford | Halifax |

**Estuarine and Inland Fisheries**

| | | |
|---|---|---|
| Director | L.L. MacLeod | Pictou |
| Secretary to the Director | Mrs. C. Cooper | Pictou |
| Supervisor, Inland Fisheries | G.M. Hill | Pictou |
| Aquaculture Development Coordinator | B.C. Muise | Halifax |
| Biologist | A.G. Bagnall | Ostrea Lake |
| Maintenance Worker | R.A. Truen | Ostrea Lake |
| Hatchery Manager | D.A. MacLean | Fraser's Mills |
| Fisheries Technician | D.J. MacDonald | Fraser's Mills |
| Rearing Pond Attendant | D.D. Murrant | Fraser's Mills |
| Rearing Pond Attendant | D. MacGrath | Fraser's Mills |
| Hatchery Manager | M. McNeil | St. Peters |
| Rearing Pond Attendant | M. MacPhail | St. Peters |
| Rearing Pond Attendant | D. MacNearney | St. Peters |

**Industrial Development Division**

| | | |
|---|---|---|
| Director | G.R. Richard | Halifax |
| Secretary to the Director | Mrs. N.L. Riles | Halifax |
| Coordinator, Development Programs | D.F. Hansen | Halifax |
| Incentive Programs Assistant | Mrs. M.E. Meagher | Halifax |
| Development Officer | R.C. MacLean | Halifax |
| Manager, Marine Technology | VACANT | Halifax |
| Fisheries Technician | O.E. Egilsson | Pictou |
| Supervisor, Plants and Facilities | G.B. Scott | Halifax |
| Fisheries Technician | W.J. MacDonald | Halifax |
| Port Facilities Engineer | M.F. Giles | Halifax |
| Supervisor, Resource Technology | M.A. Drebot | Halifax |

**Nova Scotia Fisheries Loan Board**

| | | |
|---|---|---|
| Executive Director | J.A. Marsters | Halifax |
| Manager, Fisheries Loans | E.A. MacIntosh | Halifax |
| Secretary | Miss N.E. Corkum | Halifax |
| Clerk Typist | Mrs. R.A. Jardine | Halifax |
| Stenographer | Ms. D.M. Jollimore | Halifax |
| Chief Accountant | C.E. Decker | Halifax |
| Accounting and Insurance Clerk | Mrs. L.M. Fraser | Halifax |
| Accounting Clerk | Mrs. B.J. Tribble | Halifax |
| Loan Officer | J.P. Sarty | Halifax |
| Loan Officer | B.M. Allen | Halifax |
| Loan Officer | B.E. Cox | Halifax |
| Assistant Loan Officer | Mrs. L.M. Provender | Halifax |
| Technical Services Officer | M. Myketyn | Halifax |
| Fishing Vessel Inspector | B.G. Stockley | Halifax |
| Fishing Vessel Inspector | W.R. Buffett | Halifax |
| Fishing Vessel Inspector | T. Prewett | Halifax |
| Loans Administrator | E.J. Pellerin | Halifax |

**Training and Field Service Division**

**Training**

| | | |
|---|---|---|
| Director | J.J. McLevey | Halifax |
| Secretary to the Director | Mrs. B.J. O'Brien | Halifax |
| Supervisor, Fisheries Training Centre | D.F. Robertson | Pictou |
| Chief Clerk | Miss S.M. Bowron | Pictou |
| Instructor (Navigation) | L.M. Dube | Pictou |
| Instructor (M.E.D.) | VACANT | Pictou |
| Instructor (Navigation/M.E.D.) | D.B. MacCallum | Pictou |
| Instructor (Engines/M.E.D.) | J.W. Grant | Pictou |
| Instructor (Engines) | Ira Grant | Pictou |
| Instructor (Engines) | G. Gauthier | Pictou |
| Instructor (Business) | Miss B.J. Wright | Pictou |
| Instructor (Nets and Gear) | A.F. Tobey | Pictou |
| Maintenance Worker | E.G. Dalton | Pictou |
| Chief Cook | Mrs. A. MacKay | Pictou |
| Housekeeping Aid | Mrs. L. Betts | Pictou |

**Field Service**

| | | |
|---|---|---|
| Supervisor, Field Service | C.F. MacKinnon | Halifax |
| Fisheries Representative | C.W. Rankin | Pictou |
| Fisheries Representative | L.A. Tobey | Port Hood |
| Fisheries Representative | A.P. Kehoe | Petit de Grat |
| Fisheries Representative | G.T. Boudreau | Little Dover |
| Fisheries Representative | G.C. Mossman | Rose Bay |
| Fisheries Representative | G.A. Nickerson | Clark's Harbour |
| Fisheries Representative | A.J. Muise | Middle West Pubnico |
| Fisheries Representative | R.K. McDormand | Granville Ferry |

**Department of Fisheries**
**Ordinary Expenditures**

| Fiscal Year Ending March 31 | Total Ordinary Expenditures |
|---|---|
| 1965 | $ 230,787 |
| 1966 | 340,653 |
| 1967 | 321,742 |
| 1968 | 530,166 |
| 1969 | 412,577 |
| 1970 | 458,034 |
| 1971 | 1,020,778 |
| 1972 | 1,373,784 |
| 1973 | 908,457 |
| 1974 | 3,138,359[1] |
| 1975 | 1,088,534 |
| 1976 | 661,763 |
| 1977 | 2,350,456 |
| 1978 | 3,149,131 |
| 1979 | 5,377,213 |
| 1980 | 5,841,649 |
| 1981 | 11,047,135[2] |
| 1982 | 13,758,223 |
| 1983 | 12,642,688 |
| 1984 | 10,891,506 |
| 1985 | 11,496,630 |
| 1986 | 9,482,968 |

[1] More than $2 million was spent in the form of special assistance to help the industry recover from a storm in June, 1973.

[2] Beginning in 1981, capital advance interest charges for the Fisheries Loan Board are included in the Department of Fisheries estimates. These charges were previously accounted for under Department of Finance estimates.

**Organizational Chart Department of Fisheries**